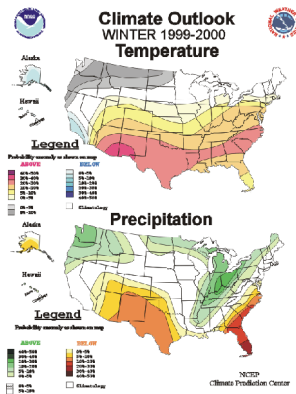
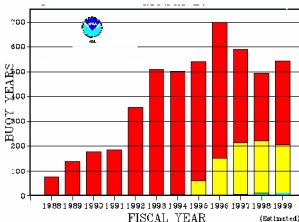


# NOAA RESEARCH 2001

## Climate Observations and Services: Climate Data and Information/Data Access



Winter 1999-2000 outlook provided by the Climate Prediction Center. These are forecasts of the most likely shifts of the probability distribution of either seasonal average temperature or seasonal total precipitation. These are NOT forecasts of values or extremes of temperature or rainfall amount.



Amount of data, measured in buoy-years, collected each year from the global drifting buoy array since 1988.

### NOAA Request

As part of the \$28.0 million FY 2001 request for the Climate Observations and Services Initiative in the Oceanic and Atmospheric Research budget activity, NOAA is requesting \$10.0 million to begin to expand operational products and correct deficiencies in data infrastructure and access.

### Background

As environmental monitoring networks improve and expand, it is essential that data management and dissemination systems are in place to make the resulting data and information widely and easily accessible to scientists and public and private sector decision makers. During recent years, NOAA has struggled to respond adequately to questions from industry, the general public, and the Government regarding potential changes in weather and climate events. Many communities have an unfilled demand for data and information related to past, present, and expected changes in weather and climate which they need to enhance their resilience to climate variability and associated weather events.

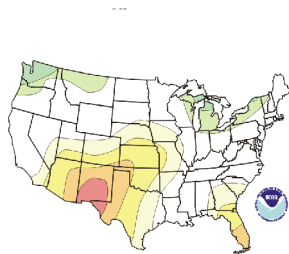
### Proposed Actions

NOAA must improve its capability to assemble, develop and communicate information about the trends and future expectations of climate and weather events. Specifically:

- The **Climate Prediction Center** will translate the increasing information and understanding of climate variability into useful operational products. This will be done by improving climate forecast models, improving the way in which observational data are entered into climate models, and developing a broad continuum of new forecast products which emphasize risks of high-impact weather events as they relate to climate variability. In FY 2001, NWS will extend current Climate-Threats Assessment (flood, fire and drought conditions) from two weeks to three months. In addition, NWS will extend the new Extreme Heat Index from two weeks to three months.
- **Access to the large volume of ground-based and space-based data** will be improved so that they will be easily available to the public, private industry, decision-makers, and scientists. The system will include the development of optimized storage technologies, such as data compression and decompression, media migration to new generation storage devices, and improved internet access to near-real-time data.
- **Real-time updates** to the Nation's highest quality long-term ocean and atmospheric data sets will be developed and implemented. An infrastructure will be put in place to routinely update, ensure access to, and produce critical information about the use of these data.
- **Observation Network Performance** will be improved to ensure that the key *in situ* and satellite observing networks, such as the U.S. Upper Air Network and the U.S. Buoy Network, adhere to the principles and guidelines for Long-Term Climate



Damage from the 1998 New York ice storm. A tree appears to have collapsed over a truck due to the weight of the ice. (FEMA photo)



Map showing a 90 day outlook for precipitation in the U.S. produced by the Climate Prediction Center. Areas in red face the prospect of below normal rainfall totals and drought conditions.



Georgia Houses caught in 1998 flood waters. (FEMA photo)

Monitoring as articulated by the U.S. National Academy of Sciences. These principles and guidelines include: (1) using indicators to monitor the performance of these networks; (2) providing overlapping coverage when new instruments are introduced; and (3) ensuring the data are used in national and international assessments to help evaluate data quality.

- The links between ***Climate and High Impact Weather Events*** will be established to increase the value and usefulness of NOAA's climate information. Of particular importance is how climate variations such as El Niño, La Niña, the Pacific Decadal and North Atlantic Oscillations, and long-term trends influence the risk of high impact weather events across the U.S. A focused observational, analysis and modeling effort will quantify the link between climate variability and weather variability. As part of this effort NOAA will establish a series of high resolution regional efforts that will include the effects of Pacific climate variability on the United States. These efforts will (1) improve predictions of the timing and location of high-impact weather events; (2) provide new tools for predicting and localizing risks of significant weather phenomena; and (3) accelerate the transfer of information to the public about ongoing trends of extreme weather and climate events, as well as provide new products about future probabilities of high impact events which are of particular relevance to business and industry medium and long-term planning and operations.

### Benefits

Through the Climate Prediction Center, NOAA will serve the needs of its customers in industry, the general public, and the Government for increasingly more accurate data, information, and knowledge regarding potential changes in climate and extreme weather events. The categories of the new and improved products are: biweekly to multi-year probabilities of rainfall events and droughts, probabilities of above- and below-normal hurricane seasons in the Atlantic and Pacific, probabilities of biweekly to multi-year temperature extremes (including dangerous heat events and major Arctic and Canadian cold air outbreaks), and probabilities for increased risk of fires on multiple time scales.

Improving the overall performance of the observing networks will allow NOAA to avoid reconstructing entire historical data sets because of problems uncovered long after initial observations. These data can then be used to minimize environmental risks and maximize climate-related opportunities. Existing data records have been collected at a cost the U.S. taxpayers. Improving access to these records will increase the effectiveness of NOAA's data management activities for both *in situ* and satellite data, drive down NOAA's costs of data management, and improve user services by providing access to data that are presently too costly for most users to access.

Benefits of establishing the link between climate and extreme weather events include improved operational climate forecasts and more effective risk and resources management. During the 1997-98 El Niño event, NOAA researchers demonstrated the high value of establishing rapid transfer of research data and information to forecast offices, water resource managers, emergency managers, decision makers, media and the public. Improvements in forecasting both climate variability and high impact weather will provide significant economic benefits only if they are communicated effectively to the end-users of the information.